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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,684	04/14/2004	Takehiro Saruwatari	AI 336	5371

7590 10/16/2006

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EXAMINER

PILKINGTON, JAMES

ART UNIT	PAPER NUMBER
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3682

DATE MAILED: 10/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	10/823,684		SARUWATARI ET AL.	
	Examiner		Art Unit	
	James Pilkington		3682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 12 and 13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-9, 12 and 13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/14/04 & 9/12/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Claims 1-9, 12 and 13 in the reply filed on September 25, 2006 is acknowledged.

Priority

2. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 2003-110674, filed on April 15, 2003 in Japan.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu, USP 4,825,972, in view of Haruhiko, JP 2002-54720.

Shimizu discloses an electric power steering apparatus comprising:

- An electric motor (9)
- A speed reduction mechanism comprising:
 - An input pulley (9a)
 - An output pulley (8f) having an annular shape (see Figure 1a or 6)
 - A steering shaft (6) which includes a rack shaft extending along a width of a vehicle (see Figure 1a, C3/L22-49)

- A belt (9b)
- A conversion mechanism (8) for converting a rotation of the output pulley (8f) into an axial movement of the rack shaft (6)
- The conversion mechanism is a ball screw mechanism which comprises:
 - A ball nut (8a) integral with the output pulley (8f)
 - A screw groove (6b) formed in the rack shaft (see Figure 1a, housing balls)
 - And a ball (8c) interposed between the screw groove and ball nut (8a)

Shimizu does not disclose that the belt and pulleys have helical teething that is angled in a range of 5 to 10 degrees.

Haruhiko teaches a synchronous belt driving gear wherein the belt and pulleys have helical teething (see all Figures) that is angled in a range of 5 to 10 degrees (see translation submitted by applicant paragraph 15) for the purpose of allowing for a mutual engagement period between the group and to reduce the noise in the pulley section (see translation submitted by applicant paragraph 7).

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the teachings of Shimizu and provide for the belt and pulleys have helical teething that is angled in a range of 5 to 10 degrees, as taught by Haruhiko, for the purpose of allowing for a mutual engagement period between the group and to reduce the noise in the pulley section.

5. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu, USP 4,825,972, in view of Haruhiko, JP 2002-54720, and further in view of Redmon, USP 4,631,044.

Shimizu in view of Haruhiko discloses an of the claimed subject matter above.

Shimizu in view of Haruhiko does not disclose means for changing a distance between respective centers of the input pulley and the output pulley, a first housing for holding the input pulley, a second housing for holding the steering shaft (output) and the means for changing the distance includes a spacer interposed between the housings.

Redmon teaches means for changing a distance between respective centers of the input pulley (48) and the output pulley (54), a first housing (20) for holding the input pulley, a second housing (36) for holding the steering shaft (output 66/82) and the means for changing the distance includes a spacer (30) interposed between the housings (goes through 20 and pushes off of 36) for the purpose of providing a way for easily adjusting the tension of the belt after it has been in operation for an extended period (C2/L1-3).

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the teachings of Shimizu in view of Haruhiko and provide means for changing a distance between respective centers of the input pulley and the output pulley, a first housing for holding the input pulley, a second housing for holding the steering shaft and the means for changing the distance includes a spacer interposed between the housings for the purpose of providing a way for easily adjusting the tension of the belt after it has been in operation for an extended period.

****The examiner notes that a second translation of the Haruhiko document has been requested.**

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Pilkington whose telephone number is (571) 272-5052. The examiner can normally be reached on Monday-Friday 8:00AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on (571) 272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3682

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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10/3/06

A handwritten signature in black ink, appearing to read 'Richard Ridley', is positioned above the printed name and title.

RICHARD RIDLEY
SUPERVISORY PATENT EXAMINER